Construction

SikaWrap®-930 G/45

Woven glass fiber fabric for structural strengthening

Product Description

SikaWrap®-930 G/45 is a unidirectional woven glass fiber fabric for the wet application process.

Uses

Strengthening of reinforced concrete structures, brickwork and timber to increase flexural and shear load capacity. Reasons:

- Prevention of defects caused by seismic action
- Blast mitigation (accidents or terrorism)
- Improved seismic performance of masonry walls
- Electrical environments that ask for non-conductive material
- Strength and ductility of columns
- Improved serviceability
- Structural upgrading to comply with current standards

Characteristics / Advantages

- Manufactured with weft fibers to keep the fabric stable (heat-set process)
- Multifunctional use for every kind of strengthening requirement
- Flexibility of surface geometry (Beams, columns, chimneys, piles, walls, silos)
- Approvals available in several countries
- Economical compared to traditional techniques
- Excellent cost performance
- Non conductive

Tests

Approval / Standards

Conforms to the requirement of:

- ICBO Evaluation Report ER 5558 (USA).

Product Data

Form

Fiber Type

E-glass fibers.

Fabric Construction

Fiber orientation: 0° (unidirectional).

Warp: white glass fibers (98% of total areal weight).

Weft: white thermoplastic heat-set fibers (2% of total areal weight).

Packaging

	Fabric length / roll	Fabric width
1 roll in cardboard box	≥ 50 m	600 mm

Storage

Storage Conditions / Shelf Life

24 months from date of production if stored properly in undamaged original sealed packaging in dry conditions at temperatures between +5°C and +35°C.
Protect from direct sunlight.

Technical Data

Areal Weight

935 g/m^2 ± 47 g/m^2

Fabric Design Thickness

0.358 mm (based on total glass content)

Fiber Density

2.56 g/cm^3

Mechanical / Physical Properties

Dry Fiber Properties

Tensile strength:
3'400 N/mm^2 (measured on virgin filament)
2'300 N/mm^2 (measured on roving)

Tensile E-modulus:
76'000 N/mm^2 (nominal)

Elongation at break:
2.8% (measured on roving)

Laminate Properties

Laminate thickness:
1.2 mm per layer (impregnated with Sikadur®-300)

Ultimate load:
760 kN/m width per layer (at typical laminate thickness of 1.2 mm)

Tensile E-modulus:
22.0 kN/mm^2 (based on typical laminate thickness of 1.2 mm)

Note:
The above values are typical and indicative only.
The achievable laminate properties obtained from tensile test are dependant on the impregnating/laminating resin used and the type of tensile testing procedure.
Apply material reduction factors according to the relevant design standard.

Design

Design strain:
Max. 0.75% (this value is dependent on the type of loading and must be adapted according to the relevant local design standards)

Tensile strength: (theoretical tensile strength for the design):

- at elongation 0.4%: 100 kN/m width (= 60 kN/60cm)
- at elongation 0.6%: 150 kN/m width (= 90 kN/60cm)

System Information

System Structure

The system configuration as described must be fully complied with and may not be changed.

Concrete primer - Sikadur®-330 / Sikadur®-300.

Impregnating / laminating resin - Sikadur®-300.

Structural strengthening fabric - SikaWrap®-930 G/45.

For detailed resin properties, fabric application details and general information refer to Sikadur®-300 Product Data Sheet.

Application Details

Consumption	Primer on prepared substrate (depending on the roughness): - Smooth surface: ~ 0.5 kg/m^2 (Sikadur®-300 or Sikadur®-330). - Rough surface: ~ 0.5 - 1.0 kg/m^2 (Sikadur®-330 or Sikadur®-300 mixed with max. 5% thixotropic agent Sikadur®-513). Impregnation resin for every layer (manually or with saturator): - ≥ 0.75 kg/m^2 (Sikadur®-300)
Substrate Quality	Specific requirements: Minimal substrate tensile strength: 1.0 N/mm^2 or as specified in the strengthening design.
Substrate Preparation	Refer to Sikadur®-300 Product Data Sheet.

Application Instructions

Application Method / Tools	The fabric can be cut with special scissors or razor knife. Never fold the fabric! Refer to Sikadur®-300 Product Data Sheet for impregnating / laminating procedure.
Notes on Application / Limitations	This product may only be used by experienced professionals. Minimum radius required for application around corners: > 20 mm. Grinding edges or building up with Sikadur® mortars may be necessary. In fiber direction, overlapping of the fabric must be at least 150 mm depending on SikaWrap® type or as specified in the strengthening design. For side-by-side application, no overlapping length in the weft direction is required. Overlaps of additional layers must be distributed over the column circumference. The strengthening application is inherently structural and great care must be taken when choosing suitably experienced contractors. The SikaWrap®-930 G/45 fabric is coated to ensure maximum bond and durability with the Sikadur® impregnating / laminating resins. To maintain system compatibility do not interchange system parts. The SikaWrap®-930 G/45 may be / must be coated with a cementitious overlay or coatings for aesthetic and / or protective purposes. Selection will be dependent on exposure requirements. For basic UV protection use Sikagard®-550 W Elastic, Sikagard® ElastoColor-675 W or Sikagard®-680 S.

Value Base

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

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Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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